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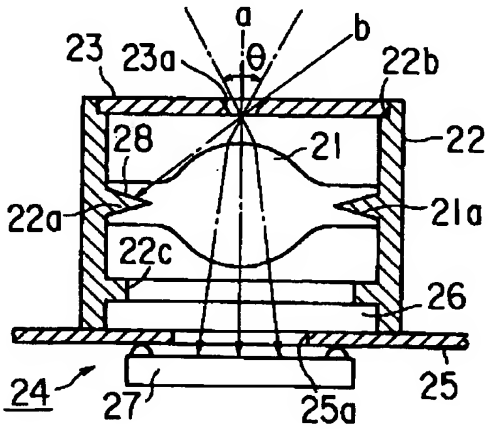
(54)【発明の名称】　モールドレンズの取付機構

(57)【要約】
【課題】この発明は、フレアゴーストの発生を防止し、モールドレンズを正確に位置決め可能にする。
【解決手段】モールドレンズ２１の溝２１ａが嵌合されるレンズ支持部２２の凸部２２ａに低反射率材２８を設けて、絞り孔２３ａを介して入射した光が、撮像部２４に到達するまでにレンズ支持部２２内で乱反射することを極力抑える。



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【特許請求の範囲】

【請求項１】　所定の厚みを有する円盤状に形成され、周側面に沿って位置決め用の溝が形成された非球面のモールドレンズと、

このモールドレンズの溝に嵌合して該モールドレンズを支持する第１の位置決め部が内周面に沿って形成された筒状のレンズ支持部とを具備し、

前記レンズ支持部の一端側に、外光を前記モールドレンズに導く絞り孔の形成された絞り部を支持する第２の位置決め部を形成するとともに、

前記レンズ支持部の他端側に、前記モールドレンズと、該モールドレンズを介して入射された光が受光される撮像部との距離を決める第３の位置決め部を形成し、

前記レンズ支持部を低反射率材で形成するか、

前記モールドレンズの溝及び前記レンズ支持部の第１の位置決め部の少なくともいずれか一方に低反射率材を設けたことを特徴とするモールドレンズの取付機構。

【請求項２】　前記レンズ支持部は、略同形に形成された一対の半割り支持部を互いに突き合わせて合体させることにより構成され、この一対の半割り支持部によって、前記モールドレンズをその周側面側から挟み込むことにより、内部に前記モールドレンズを支持することを特徴とする請求項１記載のモールドレンズの取付機構。

【請求項３】　前記撮像部は、光通過孔の形成された基板と、この基板の一方の面に前記光通過孔を閉塞するように設置されたカバーガラスと、前記基板の他方の面に前記光通過孔を閉塞するように設置された固体撮像素子とから構成され、

前記レンズ支持部の第３の位置決め部は、前記カバーガラスに接触して、前記モールドレンズと前記固体撮像素子との距離を設定することを特徴とする請求項１記載のモールドレンズの取付機構。

【請求項４】　前記絞り部が、カメラモジュール部の筐体と一体的に形成されていることを特徴とする請求項１記載のモールドレンズの取付機構。

【請求項５】　前記モールドレンズの周側面に形成された溝は、ねじ溝であって、前記レンズ支持部に形成された第１の位置決め部は、前記モールドレンズのねじ溝に螺合されるねじ部であることを特徴とする請求項１記載のモールドレンズの取付機構。

【請求項６】　所定の厚みを有する円盤状に形成され、周側面に沿って位置決め用の溝が形成された非球面のモールドレンズと、

このモールドレンズの溝に嵌合して該モールドレンズを支持する位置決め部が内周面に沿って形成され、外周面に沿ってねじ溝が形成され、一端側に外光を前記モールドレンズに導く絞り孔の形成された絞り部を有する円筒状のレンズ支持部と、

このレンズ支持部のねじ溝に螺合されるねじ部が内周面に形成され、前記レンズ支持部の他端側に前記モールドレンズを介して入射された光が受光される撮像部を有する固定部とを具備し、

前記レンズ支持部を低反射率材で形成するか、

前記モールドレンズの溝及び前記レンズ支持部の位置決め部の少なくともいずれか一方に低反射率材を設けたことを特徴とするモールドレンズの取付機構。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】この発明は、例えば小型撮像装置等に使用される非球面のモールドレンズに係り、特にその取付機構の改良に関する。

【０００２】

【従来の技術】周知のように、近年では、非球面のモールドレンズを用いた小型撮像装置の開発が盛んに行われている。モールドレンズに用いられる材料は、ガラスからプラスチックに代わっている。プラスチックは、非球面の成形性・量産性・耐衝撃性に優れ、軽量で低コストを実現する。

【０００３】樹脂材料としては、アクリル、ポリカーボネート、ポリスチロール等が使用される。現在では、ＣＤ（Compact Disk）用対物レンズ、カメラ用レンズ、投写ＴＶ（Television）用レンズ、眼鏡、ファインダーレンズ等、多方面に広く利用される。

【０００４】図８は、非球面モールドレンズを用いた従来の小型撮像装置を示す（特開平９－２８４６１７号公報参照）。非球面のモールドレンズ１１は、筒状のレンズ支持部１２に収納する。レンズ支持部１２の上端には、天板１２ａが形成され、天板１２ａの中央部に外光を取り入れる絞り孔１２ａを形成する。

【０００５】レンズ支持部１２の下端は開口し、撮像部１３に対向する。撮像部１３は、光通過孔１４ａの形成された印刷配線基板１４の、一方面にカバーガラス１５を、他方面に固体撮像素子１６を設置する。モールドレンズ１１の周縁部には、レンズ脚１１ａを形成し、その先端をカバーガラス１５に接触させて、モールドレンズ１１と固体撮像素子１６との距離を規定する。

【０００６】絞り孔１２ｂを介してレンズ支持部１２内に入射された常光、つまり、印刷配線基板１４への光軸の中心線ａに対して所定の角度θの範囲内で入射する、撮像に適した明るさの光は、モールドレンズ１１、カバーガラス１５、印刷配線基板１４の光通過孔１４ａを介して、固体撮像素子１６上に受光し、電気的信号に変換する。

【０００７】

【発明が解決しようとする課題】常光に対して非常に明るい、例えば太陽光や照明ランプの直接光等の異常光線が、矢印ｂで示すように、印刷配線基板１４の光軸の中心線ａに対する所定の角度θの範囲外の、絞り孔１２ｂで規定されたぎりぎりの角度で入射すると、その異常光線がモールドレンズ１１の端面で乱反射し、不要光が固

体撮像素子１６に受光されてフレアゴーストが発生する。

【０００８】モールドレンズ１１は、そのレンズ本体の部分とレンズ脚１１ａの部分とで、熱膨張率を正確に一致させるように製造することが実際上困難であるため、モールドレンズ１１のレンズ本体部分と固体撮像素子１６との距離を正確に設定することが困難になる。

【０００９】この発明は、フレアゴーストの発生を防止しモールドレンズを正確に位置決めし得るモールドレンズの取付機構を提供することを目的とする。

【００１０】

【課題を解決するための手段】この発明に係るモールドレンズの取付機構は、所定の厚みを有する円盤状に形成され、周側面に沿って位置決め用の溝が形成された非球面のモールドレンズと、このモールドレンズの溝に嵌合して該モールドレンズを支持する第１の位置決め部が内周面に沿って形成された筒状のレンズ支持部とを備え、レンズ支持部の一端側に、外光をモールドレンズに導く絞り孔の形成された絞り部を支持する第２の位置決め部を形成するとともに、レンズ支持部の他端側に、モールドレンズと該モールドレンズを介して入射された光が受光される撮像部との距離を決める第３の位置決め部を形成し、レンズ支持部を低反射率材で形成するか、モールドレンズの溝及びレンズ支持部の第１の位置決め部の少なくともいずれか一方に低反射率材を設ける。

【００１１】上記の構成によれば、円盤状のモールドレンズの周側面に位置決め用の溝を形成し、筒状のレンズ支持部の内周面に、モールドレンズの溝に嵌合して該モールドレンズを支持する第１の位置決め部を形成したので、モールドレンズを正確に位置決めして支持できる。

【００１２】レンズ支持部を低反射率材で形成するか、モールドレンズの溝及びレンズ支持部の第１の位置決め部の少なくともいずれか一方に低反射率材を設けたので、フレアゴーストの発生を防止できる。

【００１３】

【発明の実施の形態】以下、この発明の一実施の形態について図面を参照して詳細に説明する。図１において、モールドレンズ２１は、所定の厚みを有し、周縁部よりも中央部が肉圧な非球面の円盤状に形成し、その周側面に沿って位置決め用となる断面略Ｖ字状の溝２１ａを形成する。

【００１４】モールドレンズ２１は、その溝２１ａに、円筒形状のレンズ支持部２２の内周面に沿って形成された位置決め部となるリング状の凸部２２ａを嵌合し、レンズ支持部２２内に支持する。レンズ支持部２２の上端部には、外光をモールドレンズ２１に導く絞り孔２３ａが中央部に形成された板状の絞り部２３を支持する、位置決め部となる支持部２２ｂを形成する。

【００１５】レンズ支持部２２の下端部は、撮像部２４に対向する。撮像部２４は、光通過孔２５ａの形成された印刷配線基板２５の、一方面にカバーガラス２６を、他方面に固体撮像素子２７を設置する。レンズ支持部２２の下端部には、その内周面に沿って位置決め部となるリング状のガイド部２２ｃを形成する。ガイド部２２ｃがカバーガラス２６に接触して、モールドレンズ２１に対する撮像部２４の焦点位置を規定する。

【００１６】モールドレンズ２１の溝２１ａ及びレンズ支持部２２の凸部２２ａのいずれか一方には、低反射率材２８を設ける。低反射率材２８は、例えば黒色塗料である。レンズ支持部２２全体をアルミニウムで形成し、その凸部２２ａに黒色艶消しアルマイト処理を施してもよい。

【００１７】上記の構成によれば、絞り孔２３ａを介してレンズ支持部２２内に入射した常光、つまり、印刷配線基板２５への光軸の中心線ａに対して所定の角度θの範囲内で入射した、撮像に適した明るさの光は、モールドレンズ２１、カバーガラス２６、印刷配線基板２５の光通過孔２５ａを介して、固体撮像素子２７上に受光し、電気的信号に変換する。

【００１８】常光に対して非常に明るい異常光線が、矢印ｂで示すように、印刷配線基板２５の光軸の中心線ａに対する所定の角度θの範囲外の、絞り孔２３ａで規定されたぎりぎりの角度で入射すると、その異常光線が低反射率材２８に吸収され、固体撮像素子１６に乱反射されなくなるので、フレアゴーストの発生を防止できる。

【００１９】レンズ支持部２２に形成された凸部２２ａ、支持部２２ｂ及びガイド部２２ｃにより、モールドレンズ２１、絞り部２３及び撮像部２４をそれぞれ位置決めしているので、各部材単独の位置出しを正確に行えるとともに、各部材相互間の位置出しも正確になる。モールドレンズ２１の溝２１ａは、非球面を形成する金型で同時成形するので、光軸に対しての偏芯を防ぐこともできる。

【００２０】図２（ａ），（ｂ）は、レンズ支持部２２の詳細を示す。レンズ支持部２２は、円筒を縦に半分に割った、略同形に形成された一対の半割り支持部２２１，２２２を互いに突き合わせて合体させ接着することにより構成される。図３に示すように、一対の半割り支持部２２１，２２２によって、モールドレンズ２１をその周側面側から挟み込むことにより、レンズ支持部２２内にモールドレンズ２１を収納する。

【００２１】図４（ａ）～（ｅ）は、撮像部２４の製造工程を示す。図４（ａ）に示すように、印刷配線基板２５には、光通過孔２５ａを形成するとともに、その一方面に電極２５ｂを形成する。図４（ｂ）に示すように、印刷配線基板２５の他方面に紫外線硬化接着剤２５ｃを塗布し、図４（ｃ）に示すように、カバーガラス２６を接着して、光通過孔２５ａを閉塞する。

【００２２】図４（ｄ）に示すように、印刷配線基板２５の電極２５ｂに異方性導電ペースト接着剤２５ｄを塗

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布し、固体撮像素子２７に設置された金ボールバンプ２７ａを熱圧着する。これで、印刷配線基板２５の電極２５ｂと固体撮像素子２７とを電気的に接続する。図４（ｅ）に示すように、固体撮像素子２７の周囲を紫外線硬化樹脂２５ｅで固め、撮像部２４が構成される。

【００２３】撮像部２４は、例えば特開平７－９９２１４号公報等に示すように、現在の技術で非常に寸法精度良く実現できる。カバーガラス２６は、固体撮像素子（ベアチップ撮像素子）２７と同時に数ミクロンの精度で実装されるため、レンズ支持部２２のガイド部２２ｃを当接させて位置決めするのに都合が良い。

【００２４】図５は、上記実施の形態の変形例を示す。印刷配線基板２５には、固体撮像素子２７と、その信号処理のための各種の回路素子２９とを接続してカメラモジュール部３０を構成する。カメラモジュール部３０は、ねじ３１ａによって印刷配線基板２５に固定される筐体３１によって囲まれる。筐体３１は、絞り部２３と一体化する。

【００２５】図６は、他の変形例を示す。モールドレンズ２１には、その周側面に沿ってねじ溝２１ｂを形成する。レンズ支持部２２には、その内周面に沿ってモールドレンズ２１のネジ溝２１ｂと螺合するねじ部２２ｄを形成する。モールドレンズ２１は、回転させると光軸方向に移動され、その位置の微調整を行える。

【００２６】図７は、さらに他の変形例を示す。レンズ支持部２２には、絞り部２３を一体的に形成する。レンズ支持部２２には、その外周面に沿ってねじ溝２２ｅを形成する。撮像部２４の印刷配線基板２５には、内周面に沿ってレンズ支持部２２のねじ溝２２ｅに螺合するねじ部３２ａを形成した円筒形状の固定部３２を支持する。レンズ支持部２２を回転させるとモールドレンズ２１が光軸方向に移動され、その位置の微調整を行える。

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【００２７】

【発明の効果】この発明によれば、フレアゴーストの発生を防止できるとともに、モールドレンズを正確に位置決めできる。

【図面の簡単な説明】

【図１】この発明の一実施の形態を示す断面図。

【図２】図１のレンズ支持部の詳細を示す、（ａ）は平面図、（ｂ）は断面図。

【図３】図１のレンズ支持部の組み立てを示す断面図。

【図４】図１の撮像部の製造工程を示す説明図。

【図５】図１の変形例を示す断面図。

【図６】図１の他の変形例を示す断面図。

【図７】図１のさらに他の変形例を示す断面図。

【図８】従来の小型撮像装置を示す断面図。

【符号の説明】

２１…モールドレンズ、

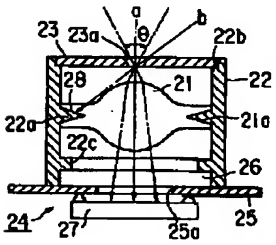
２２…レンズ支持部、

２３…絞り部、

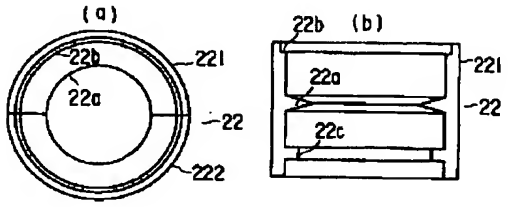
２４…撮像部、

２８…低反射率材。

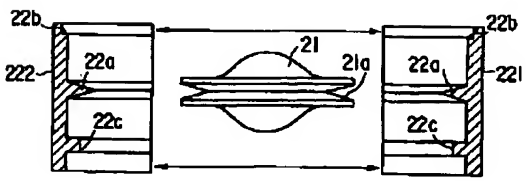
【図１】



【図２】



【図３】



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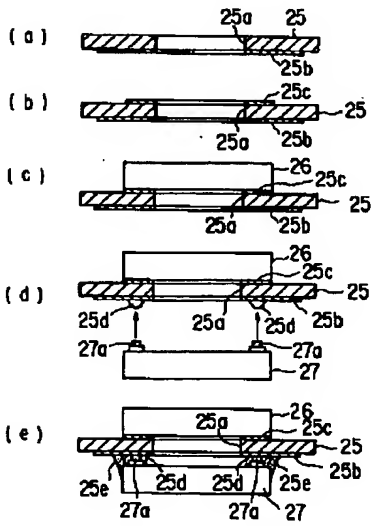

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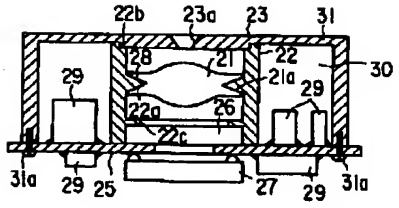
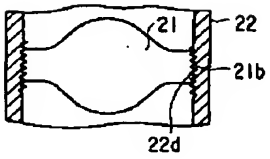
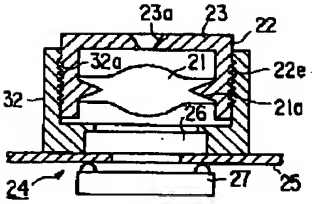

22b
23a
23
31
28
21
22
21a
30
29
29
22a
26
22c
31a
29
25
27
29
31a

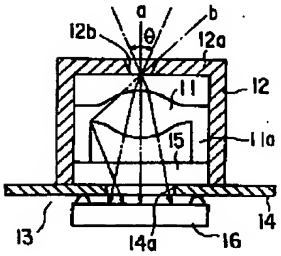
【図６】


21
22
21b
22d

【図７】


23a
23
22
32a
21
22e
32
21a
26
24
27
25

【図８】


a
b
12b
θ
12a
11
12
15
11a
13
14a
16
14

PATENT ABSTRACTS OF JAPAN

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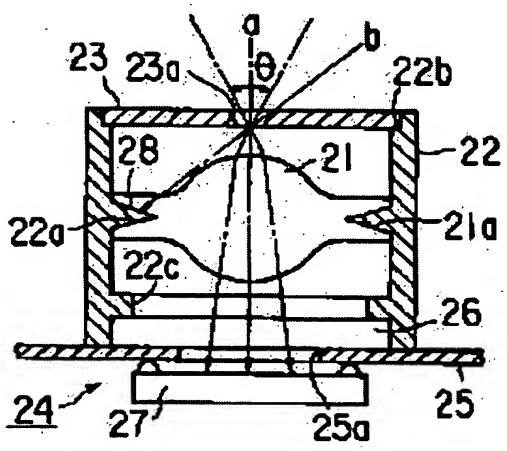
(72)Inventor : KIMURA MASANOBU

(54) FITTING MECHANISM FOR MOLD LENS

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain the fitting mechanism of a mold lens constituted so that flare and ghost are prevented from occurring and the mold lens can be precisely positioned by forming a lens supporting part of a low-reflectivity material or providing at least one out of the groove of the mold lens and the first positioning part of the lens supporting part with the low-reflective material.

SOLUTION: The mold lens 21 is supported in the cylindrical lens supporting part 22 by engaging a ring-like projection part 22a being the positioning part formed along the inside circumferential surface of the supporting part 22 with the groove 21a of the lens 21. Then, one out of the groove 21a of the lens 21 and the projection part 22a of the supporting part 22 is provided with the low-reflectivity material 28. Thus, when a light beam is made incident by a possible angle which is regulated by a diaphragm hole 23a and which is outside the range of the prescribed angle θ with respect to the center line (a) of the optical axis of a printed wiring board 25, the abnormal light beam is absorbed by the low-reflectivity material 28 so as to be prevented from being irregularly reflected on a solid image pickup element. Therefore, the flare and the ghost are prevented from occurring.



LEGAL STATUS

[Date of request for examination]

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[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]
[Claim 1] A mounting device of a mold lens characterized by providing the following A mold lens of the aspheric surface which has predetermined thickness and in which it was formed in disc-like and a slot for positioning was formed along the circumferential side While forming the 2nd positioning section which supports a converging section with which a drawing hole with which the 1st positioning section which fits into a slot of this mold lens and supports this mold lens possesses a tubed lens supporter formed along with inner skin, and leads outdoor daylight to said mold lens at an end side of said lens supporter was formed, it is said mold lens to an other end side of said lens supporter. Even if it forms the 3rd positioning section which determines distance with the image pick-up section by which light by which incidence was carried out through this mold lens is received, and it forms said lens supporter by low reflection factor material or there are little slot of said mold lens and 1st positioning section of said lens supporter, it is low reflection factor material to either.
[Claim 2] Said lens supporter is the mounting device of a mold lens according to claim 1 characterized by supporting said mold lens inside by being constituted by comparing mutually a half-rate supporter of a couple formed in abbreviation isomorphism, and making it coalesce, and putting said mold lens from that circumferential side side with a half-rate supporter of this couple.
[Claim 3] Cover glass installed so that said image pick-up section might blockade said optical passage hole in one field of a substrate with which an optical passage hole was formed, and this substrate, It consists of solid state image pickup devices installed so that said optical passage hole might be blockaded in a field of another side of said substrate. The 3rd positioning section of said lens supporter A mounting device of a mold lens according to claim 1 characterized by contacting said cover glass and setting up distance of said mold lens and said solid state image pickup device.
[Claim 4] A mounting device of a mold lens according to claim 1 characterized by forming said converging section in one with a case of the camera module section.
[Claim 5] The 1st positioning section which a slot formed in the circumferential side of said mold lens is a thread groove, and was formed in said lens supporter is the mounting device of a mold lens according to claim 1 characterized by being the thread part screwed in a thread groove of said mold lens.
[Claim 6] A mounting device of a mold lens characterized by providing the following A mold lens of the aspheric surface which has predetermined thickness and in which it was formed in disc-like and a slot for positioning was formed along the circumferential side A lens supporter of the shape of a cylinder which has a converging section with which the positioning section which fits into a slot of this mold lens and supports this mold lens was formed along with inner skin, a thread groove was formed along with a peripheral face, and a drawing hole which leads outdoor daylight to said mold lens at an end side was formed Even if a thread part screwed in a thread groove of this lens supporter is formed in inner skin, it provides a fixed part which has the image pick-up section by which light by which incidence was carried out to an other end side of said lens supporter through said mold lens is received, and it forms said lens supporter by low reflection factor material or there are little slot of said mold lens and positioning section of said lens supporter, it is low reflection factor material to either.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] This invention relates to the mold lens of the aspheric surface used for example, for small image pick-up equipment etc., and relates to amelioration of that mounting device especially.
[0002]
[Description of the Prior Art] As everyone knows, in recent years, development of the small image pick-up equipment which used the mold lens of the aspheric surface is performed briskly. The material used for a mold lens has replaced plastics from glass. Plastics is excellent in the moldability, mass production nature, and the shock resistance of the aspheric surface, is lightweight and realizes low cost.
[0003] An acrylic, a polycarbonate, polystyrol, etc. are used as a resin material. In current, the objective lens for CD (Compact Disk), the lens for cameras, the lens for projection TV (Television), glasses, a finder lens, etc. are used widely in many fields.
[0004] Drawing 8 shows the conventional small image pick-up equipment which used the aspheric surface mold lens (refer to JP,9-284617,A). The mold lens 11 of the aspheric surface is contained to the tubed lens supporter 12. Top-plate 12a is formed in the upper bed of the lens supporter 12, and drawing hole 12a which takes in outdoor daylight is formed in the center section of top-plate 12a at it.
[0005] The opening of the soffit of the lens supporter 12 is carried out, and it counters the image pick-up section 13. The image pick-up section 13 installs cover glass 15 in the one direction of the printed wiring substrate 14 with which optical passage hole 14a was formed, and installs a solid state image pickup device 16 in an another side side. Lens foot 11a is formed, the head is contacted to cover glass 15, and the distance of the mold lens 11 and a solid state image pickup device 16 is specified in the periphery section of the mold lens 11.
[0006] Through optical passage hole 14a of the mold lens 11, cover glass 15, and the printed wiring substrate 14, the light of brightness suitable for an image pick-up which carries out incidence within the limits of the predetermined angle theta to the center line a of the optical axis of Tsunemitsu 14 by whom incidence was done into the lens supporter 12 through drawing hole 12b, i.e., a printed wiring substrate, receives light on a solid state image pickup device 16, and is changed into an electric signal.
[0007]
[Problem(s) to be Solved by the Invention] If it is dramatically bright, for example, extraordinary rays, such as sunlight and direct light of a lighting lamp, carry out incidence to Tsunemitsu at the last-minute angle specified by drawing hole 12b with the predetermined angle theta out of range to the center line a of the optical axis of the printed wiring substrate 14 as an arrow head b shows, the extraordinary ray will reflect irregularly by the end face of the mold lens 11, unnecessary light will be received by the solid state image pickup device 16, and a flare ghost will occur.
[0008] The mold lens 11 is with the portion of the main part of a lens, and the portion of lens foot 11a, and since a actual top is difficult for manufacturing coefficient of thermal expansion so that it may be made in agreement with accuracy, it becomes difficult to set the distance of the main part portion of a

lens of the mold lens 11 and a solid state image pickup device 16 as accuracy.
[0009] This invention aims at offering the mounting device of a mold lens in which a flare ghost's generating is prevented and a mold lens can be positioned to accuracy.
[0010]
[Means for Solving the Problem] A mounting device of a mold lens concerning this invention A mold lens of the aspheric surface which has predetermined thickness and in which it was formed in disc-like and a slot for positioning was formed along the circumferential side, It has a tubed lens supporter with which the 1st positioning section which fits into a slot of this mold lens and supports this mold lens was formed along with inner skin. While forming the 2nd positioning section which supports a converging section with which a drawing hole which leads outdoor daylight to a mold lens was formed in an end side of a lens supporter The 3rd positioning section which determines distance with the image pick-up section by which light by which incidence was carried out to an other end side of a lens supporter through a mold lens and this mold lens is received is formed. Even if it forms a lens supporter by low reflection factor material or there are little slot of a mold lens and 1st positioning section of a lens supporter, low reflection factor material is prepared in either.
[0011] Since according to the above-mentioned configuration a slot for positioning was formed in the circumferential side of a disc-like mold lens and the 1st positioning section which fits into a slot of a mold lens and supports this mold lens to inner skin of a tubed lens supporter was formed, a mold lens can be positioned and supported to accuracy.
[0012] Since low reflection factor material was prepared in either even if it formed a lens supporter by low reflection factor material or there were little slot of a mold lens and 1st positioning section of a lens supporter, a flare ghost's generating can be prevented.
[0013]
[Embodiment of the Invention] Hereafter, the gestalt of 1 implementation of this invention is explained to details with reference to a drawing. In drawing 1 , the mold lens 21 has predetermined thickness, is formed in the discoid of the thickness [section / periphery] center section aspheric surface, and forms slot 21a of the letter of the cross-section abbreviation for V characters which becomes positioning along the circumferential side.
[0014] The mold lens 21 fits in and supports heights 22a of the shape of a ring used as the positioning section formed in the slot 21a along with the inner skin of the cylindrical shape-like lens supporter 22 in the lens supporter 22. Drawing hole 23a which leads outdoor daylight to the mold lens 21 forms in the upper bed section of the lens supporter 22 supporter 22b used as the positioning section which supports the tabular converging section 23 formed in the center section.
[0015] The soffit section of the lens supporter 22 counters the image pick-up section 24. The image pick-up section 24 installs cover glass 26 in the one direction of the printed wiring substrate 25 with which optical passage hole 25a was formed, and installs a solid state image pickup device 27 in an another side side. Guide section 22c of the shape of a ring which serves as the positioning section along with the inner skin is formed in the soffit section of the lens supporter 22. Guide section 22c contacts cover glass 26, and the focal location of the image pick-up section 24 to the mold lens 21 is specified.
[0016] The low reflection factor material 28 is formed in either slot 21a of the mold lens 21, and heights 22a of the lens supporter 22. The low reflection factor material 28 is a black coating. The lens supporter 22 whole may be formed with aluminum, and black lusterless alumite processing may be performed to the heights 22a.
[0017] According to the above-mentioned configuration, through optical passage hole 25a of the mold lens 21, cover glass 26, and the printed wiring substrate 25, the light of brightness suitable for an image pick-up which carried out incidence within the limits of the predetermined angle theta to the center line a of the optical axis of Tsunemitsu 25 who did incidence into the lens supporter 22 through drawing hole 23a, i.e., a printed wiring substrate, receives light on a solid state image pickup device 27, and is changed into an electric signal.
[0018] If a very bright extraordinary ray carries out incidence to Tsunemitsu at the last-minute angle specified by drawing hole 23a with the predetermined angle theta out of range to the center line a of the

optical axis of the printed wiring substrate 25 as an arrow head b shows, since the extraordinary ray will be absorbed by the low reflection factor material 28 and scattered reflection will not be carried out to a solid state image pickup device 16, a flare ghost's generating can be prevented.
[0019] since the mold lens 21, a converging section 23, and the image pick-up section 24 are positioned, respectively by heights 22a formed in the lens supporter 22, supporter 22b, and guide section 22c -- each part material -- while being able to perform independent location **** to accuracy -- the location appearance between each part material -- also carrying out -- it becomes accuracy. Since simultaneous shaping of the slot 21a of the mold lens 21 is carried out with the metal mold which forms the aspheric surface, it can also prevent the eccentricity to an optical axis.
[0020] Drawing 2 (a) and (b) show the details of the lens supporter 22. The lens supporter 22 is constituted by comparing mutually the half-rate supporter 221,222 of the couple which divided the cylinder into one half perpendicularly and which was formed in abbreviation isomorphism, making it coalesce, and pasting up. As shown in drawing 3 , the mold lens 21 is contained in the lens supporter 22 by putting the mold lens 21 from the circumferential side side with the half-rate supporter 221,222 of a couple.
[0021] Drawing 4 (a) - (e) shows the manufacturing process of the image pick-up section 24. As shown in drawing 4 (a), while forming optical passage hole 25a in the printed wiring substrate 25, electrode 25b is formed in the one direction. As are shown in drawing 4 (b), and ultraviolet curing adhesives 25c is applied to the another side side of the printed wiring substrate 25 and it is shown in drawing 4 (c), cover glass 26 is pasted up and optical passage hole 25a is blockaded.
[0022] As shown in drawing 4 (d), 25d of anisotropy conductive paste adhesives is applied to electrode 25b of the printed wiring substrate 25, and thermocompression bonding of the golden ball bump 27a installed in the solid state image pickup device 27 is carried out. Now, electrode 25b of the printed wiring substrate 25 and a solid state image pickup device 27 are connected electrically. As shown in drawing 4 (e), hammer hardening and the image pick-up section 24 consist of ultraviolet-rays hardening resin 25e in the perimeter of a solid state image pickup device 27.
[0023] As shown in JP,7-99214,A etc., current technology can realize the image pick-up section 24 with very sufficient dimensional accuracy. Since cover glass 26 is mounted in the precision of several microns simultaneously with a solid state image pickup device (bare chip image sensor) 27, it is convenient for making guide section 22c of the lens supporter 22 contact, and positioning.
[0024] Drawing 5 shows the modification of the gestalt of the above-mentioned implementation. A solid state image pickup device 27 and various kinds of circuit elements 29 for the signal processing are connected to the printed wiring substrate 25, and the camera module section 30 is constituted. The camera module section 30 is surrounded with the case 31 fixed to the printed wiring substrate 25 by screw-thread 31a. A case 31 is united with a converging section 23.
[0025] Drawing 6 shows other modifications. Thread-groove 21b is formed in the mold lens 21 along the circumferential side. Along with the inner skin, screw slot 21b of the mold lens 21 and 22d of thread parts to screw are formed in the lens supporter 22. It is moved in the direction of an optical axis, and the mold lens 21 can tune the location finely, if it is made to rotate.
[0026] Drawing 7 shows the modification of further others. A converging section 23 is formed in the lens supporter 22 in one. Thread-groove 22e is formed in the lens supporter 22 along with the peripheral face. In the printed wiring substrate 25 of the image pick-up section 24, the fixed part 32 of the shape of a cylindrical shape of having formed thread-part 32a screwed in thread-groove 22e of the lens supporter 22 along with inner skin is supported. If the lens supporter 22 is rotated, it is moved in the direction of an optical axis, and the mold lens 21 can tune the location finely.
[0027]
[Effect of the Invention] According to this invention, while being able to prevent a flare ghost's generating, a mold lens can be positioned to accuracy.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The cross section showing the gestalt of 1 implementation of this invention.
[Drawing 2] (a) which shows the details of the lens supporter of drawing 1 is a plan, and (b) is a cross section.
[Drawing 3] The cross section showing the assembly of the lens supporter of drawing 1 .
[Drawing 4] Explanatory drawing showing the manufacturing process of the image pick-up section of drawing 1 .
[Drawing 5] The cross section showing the modification of drawing 1 .
[Drawing 6] The cross section showing other modifications of drawing 1 .
[Drawing 7] The cross section showing the modification of further others of drawing 1 .
[Drawing 8] The cross section showing conventional small image pick-up equipment.
[Description of Notations]
21 -- Mold lens,
22 -- Lens supporter,
23 -- Converging section
24 -- Image pick-up section,
28 -- Low reflection factor material.

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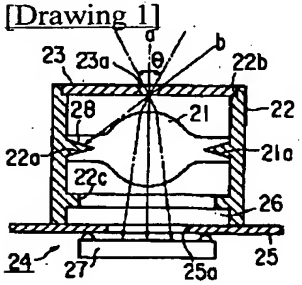
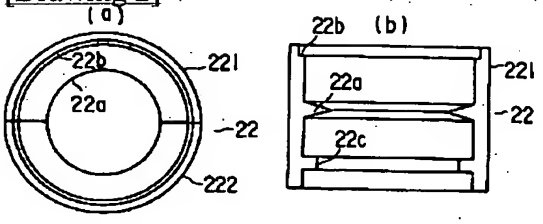
DRAWINGS

[Drawing 1]



[Drawing 2]



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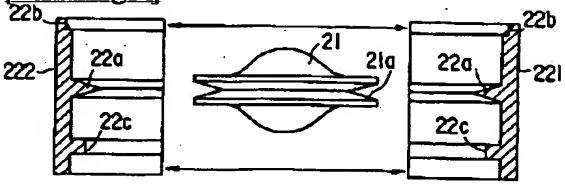

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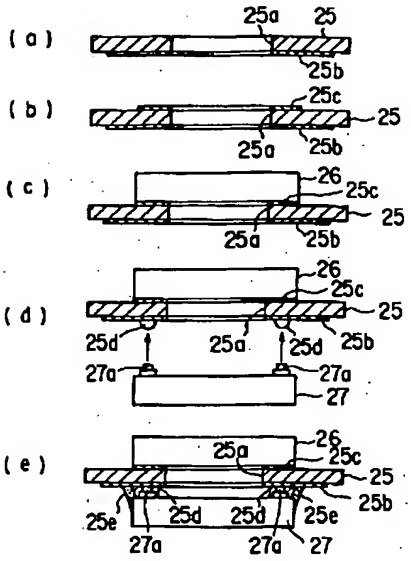

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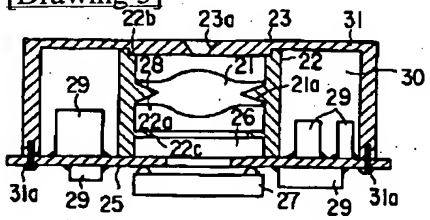
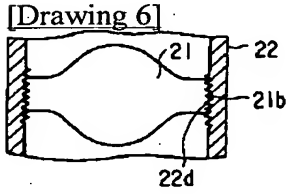
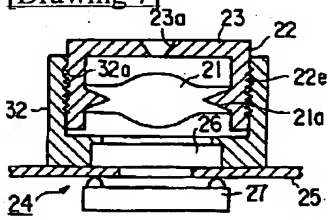


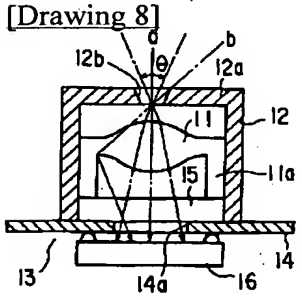
[Drawing 6]



[Drawing 7]



[Drawing 8]



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